

Attorney Docket No. 1412.02

IN THE APPLICATION

OF

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FOR AN

ANIMAL WASTE SCOOPER

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## ANIMAL WASTE SCOOPER

### CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of U.S. Provisional Patent Application Serial No. 60/416,532, filed October 8, 2002.

### BACKGROUND OF THE INVENTION

#### 1. FIELD OF THE INVENTION

The present invention relates generally to hand-operated, pole mounted grasping devices and more particularly to an animal waste scooper for sanitary handling of animal droppings from pet dogs, cats, and the like, of the type commonly referred to as a pooper scooper.

#### 2. DESCRIPTION OF RELATED ART

Devices for picking up animal feces are well known. These devices usually have two opposing jaws, pivotally mounted at the bottom of a pole. The top end of the pole usually has a handle having a lever, trigger, button, or other device for actuating the jaws. With such a device, people may retrieve trash or animal feces from the ground without bending or reaching

excessively, and further, may do so without coming into contact with the items to be picked up. However, the practical usefulness and reliability of these devices varies greatly.

One of the most appealing reasons for using such a grasping device is that the user's hands remain clean when picking up animal waste. However, typically the jaws of the device do not stay clean. The jaws are often unprotected and in direct contact with the waste material. The device will quickly become unwelcome in the user's home, due to the contamination. Thus, the device will be left outdoors and subject to the elements. This rapidly ages the device and leads to early failure or breakage. Alternatively, the user must take the time to clean the device, a chore that typically must be done by hand, preferably using rubber gloves to avoid soiling one's hands.

A few of the devices available today make use of covers for the grasping jaws, usually with plastic bags. However, there are no bag retention clips on those devices. The bags are loosely wrapped around the jaws with no regard for retention. The devices have no mechanical means for averting the external influences of wind, gravity, etc., in order to remain in place unassisted. In addition, where the device's jaws close automatically, the user must fight the tendency of the jaws to close while simultaneously attempting to place a plastic bag over the jaws.

A variation on that theme is jaws that are open when the machine is at rest. The jaws close when the device is actuated. Such a device requires the user to keep a tight grasp of the trigger or handle to keep from dropping the jaws' contents.

5           Various devices have been proposed for solving these problems.

U.S. Patent No. 4,179,145, issued to Joe Shinsako in December 1979, describes a sanitary dog litter bagger that uses bags over a pair of jaws. The bags are not secured to the jaws. 10 Actuation is by rotating the handle, requiring two hands.

U.S. Patent No. 5,380,054, issued to Misael Galvis in January 1995, describes a handheld device for picking up objects. The device may be operated with one hand, but is not intended for use with bags.

15           U.S. Patent No. 5,503,442, issued to Ke-Chiang Lee in April 1996, describes a pick-up device for picking up animal feces. The device is intended for use with bags and requires the use of a bag dispenser attached to the device's handle.

None of the above patents describes a sanitary waste 20 handling device that can be operated with a single hand, uses ordinary plastic shopping bags to line the jaws, locks open so that bags may be affixed more easily, and includes bag clips to hold the bag in place during operation.

None of the above inventions and patents, taken either singly or in combination, is seen to describe the instant invention as claimed.

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#### SUMMARY OF THE INVENTION

The animal waste scooper is a pole-mounted device for picking up waste and simultaneously placing the waste into a bag. The scooper includes a control assembly, an extension assembly, a support structure, a linkage assembly, a pair of jaws, and a bag. The control assembly comprises a handle, a trigger and a latch. The extension structure comprises a hollow pole having an upper end and a lower end, the handle being attached to the upper end of the pole. The support structure is an inverted bowl shape, with two extensions providing for linkage attachment, and is attached to the lower end of the pole. The support structure comprises a support bridge, a plurality of guide slots and a plurality of bag clips to secure a bag in place. The linkage assembly includes an actuation rod, a four-bar linkage including a double bell crank, a hinge pin, a pair of guide pins and a linkage shield. Each half of the double bell crank has its corner attached to the hinge pin, which serves as a fulcrum. The actuation rod is routed through the hollow pole and attaches to the trigger at one end and to

the four-bar linkage at the other end. The hinge pin pivotally connects the jaws, and is fixed to opposing sides of the support bridge. The guide pins are disposed through the lower arm of each half of the double bell crank and the jaws, and engage the 5 guide slots in the support bridge. A pair of springs is biased between the guide pins adjacent to the guide slots of the support bridge. The linkage shield is suspended from the hinge pin.

In use, the jaws are opened by pulling up the trigger and 10 are latched by a hook connected between the trigger and a handle. An ordinary plastic shopping bag is opened, inverted, and placed over the jaws, the sides of the bag being retained over the jaws by retainer clips on the sides of the support bridge. The latch is released while holding the trigger to keep 15 the jaws open, the jaws are positioned over the animal waste, and the trigger is released, closing the jaws to enclose the animal waste in the plastic bag.

Accordingly, it is a principal object of the invention to disclose an animal waste scooper which picks up animal waste and 20 encloses the waste in common plastic shopping bags for disposal.

It is another object of the invention to provide an animal waste scooper having bag retention clips to securely hold an ordinary plastic shopping bag in place around the jaws of the scooper.

It is a further object of the invention to provide an animal waste scooper that may be operated with one hand.

Still another object of the invention is to disclose an animal waste scooper having jaws that may be latched open to simplify the bag-loading process.

It is an object of the invention to provide improved elements and arrangements thereof in an apparatus for the purposes described which is inexpensive, dependable and fully effective in accomplishing its intended purposes.

These and other objects of the present invention will become readily apparent upon further review of the following specification and drawings.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is a fragmented perspective view of an animal waste scooper according to the present invention.

Fig. 2 is a side view of the animal waste scooper with the jaws closed according to the present invention.

Fig. 3 is a side view of the animal waste scooper with the jaws open according to the present invention.

Fig. 4 is a front view of the animal waste scooper, the opposite side being a mirror image.

Fig. 5 is a fragmented side view showing the linkage and jaws of the animal waste scooper.

Fig. 6 is a fragmented side view showing the linkage and jaws of the animal waste scooper, with bag attached and shown in phantom.

Similar reference characters denote corresponding features consistently throughout the attached drawings.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention is an animal waste scooper comprising a control assembly, an extension structure, a support structure, a linkage assembly, a pair of jaws, and a plurality of springs.

Referring to Figs. 1 and 2, the present invention is a generally vertically disposed animal waste scooper, designated generally as **8** in the drawings. The device **8** is held and operated with one hand, with the opposed scoop-shaped jaws **10** being placed over the object to be picked up. The scoop-shaped jaws have an upper containment portion and a lower grasping portion with opposing sidewalls. The user squeezes the trigger **18** to operate the linkage assembly **50** and open the jaws **10** against the biasing springs **40** (only one spring **40** is shown in the drawings, the opposite side of the scooper **8** being identical). The jaws **10** are supported by an inverted bowl-

shaped support bridge **34**, which in its preferred embodiment are made of a strong, lightweight, corrosion-resistant metallic or nonmetallic material, such as aluminum, vinyl, polycarbonate, fiberglass, or other synthetic polymeric material.

5 An ordinary plastic shopping bag is secured around the jaws **10** with the bag clips **42**. The jaws **10** are placed over and around the object on the ground and the trigger **18** is released. The springs **40** bias the jaws **10** to a closed position, capturing the object in the jaws **10** and returning the linkage assembly **50** 10 and trigger **18** to their original positions. The object may be transported to another place, such as a waste receptacle, within the device's jaws **10**. The object is released by removing the bag from the clips **42** and squeezing the trigger **18** to open the jaws **10**. The bag and its contents drop out and away from the 15 jaws **10**. For ease of manufacture, each half of the jaws **10** is identical,

Referring particularly to Fig. 2, the handle **12** of the scooper **8** comprises a grip portion **14** with a side rail **16** at 20 each end. In the preferred embodiment, the handle **12** and the grip portion **14** are each half-round shape, with the flat side of the handle **12** oriented down and the flat side of the grip portion **14** oriented up, so that when the trigger is squeezed toward the handle **12** the flat sides are together. Each side rail **16** includes a guide rib (not shown). The channels are

parallel and face toward each other. The trigger **18** is disposed in a generally D-shaped opening defined by the handle **12** and also has a grip **22** portion and two side rails **20**. The trigger's side rails **20** contain slots to engage the side rails guide ribs.

5 The trigger **18** slides upon the handle's side rail **20**, guided by the engagement of the guide ribs and slots.

The handle **12** attaches to an upper end of a hollow pole extension structure **24**. In the preferred embodiment, the pole **24** may also be made from a strong, lightweight, corrosion-resistant metallic or nonmetallic material, such as aluminum, vinyl, polycarbonate, fiberglass, or other synthetic, polymeric material. An actuator **26** is attached at one end to the trigger **18**, and is routed through the hollow pole **24**, where the other end of the actuator **26** attaches to a pin of a four-bar linkage mechanism **50**. The actuator **26** may be a cable, a rod, or other elongated material capable of withstanding the tension created by the biasing springs **40**. The linkage mechanism **50** includes a pair of upper links **28** pivotally connected to the actuator at one end, and pivotally attached to a pair of bell cranks **30** at the opposite end. Alternatively, the upper links **28** may be replaced by a single, flexible piece of material, such as a cable or monofilament line joined at its midpoint to the actuator **26**.

Each bell crank 30 has an upper arm and a lower arm rigidly attached at approximately a 90° angle, defining a corner. Each upper link 28 is pivotally attached to the upper arm of one of the bell cranks 30, which form the lower links in the four-bar linkage 50. The corners of each bell crank 30 are pivotally attached to the hinge pin 32. The lower legs of each bell crank 30 are pivotally attached to guide rods 36, which are rigidly attached to the opposing jaws 10. The double bell crank 30 provides the leverage necessary to open the jaws 10, when the trigger 18 is squeezed.

When the trigger 18 is pulled upward, one bell crank 30 rotates about the hinge pin 32 in a clockwise direction, while the other bell crank 30 rotates in a counterclockwise direction, thereby opening the jaws 10. The hinge pin 32 also pivotally connects the jaws 10 and is rigidly positioned and supported by the support bridge 34. The guide rods 36 are fixed to the jaws 10, while the ends of the guide rods 36 extend through and slide within the guide slots 38 defined in the support bridge 34. The ends of guide pins 36 are biased together by a pair of compression springs 40. In the preferred embodiment, the compression springs 40 are located inside the walls of the support bridge 34. The support bridge 34 includes a pair of bag clips 42, one on each outward facing side, for securing ordinary plastic shopping bags. A linkage shield 52 provides a

horizontal barrier within the jaws **10** and just below the guide pins **36**. The linkage shield **52** is suspended by a pair of supports attached to the hinge pin **32**. The supports extend between the guide pins **36**, without interfering with the closure of the jaws **10**. The linkage shield **52** prevents fingers and bags from becoming entangled in the linkage mechanism.

Fig. 3 is a side view of the animal waste scooper **8** according to the present invention with the jaws **10** open.

In operation, when the trigger **18** is squeezed toward the handle **12**, the actuator **26** is pulled upward, pulling the pin joining the upper links **28** upward toward the handle **12**. The linkage pulls the upper arms of the bell cranks **30** upward, drawing the upper arms of the double bell crank **30** together. The corners of the bell cranks **30** pivot on the hinge pin **32**, forcing the lower arms of the bell crank **30** apart. The attachment of the lower arms of the double bell crank **30** to the jaws **10** forces the jaws **10** open against the biasing force of the springs **40** attached to the guide rods **36**. A linkage shield **52** is suspended from the hinge pin **32** and between the guide pins **36** to provide a horizontal barrier to protect the linkage assembly.

When the trigger **18** is adjacent to the handle **12**, the latch **46** may be set, thereby locking the trigger **18** to the handle **12** and locking the jaws **10** open. Latch **46** may be a hook pivotally attached to trigger **18** which engages a pin or eyelet extending

from the handle **12**, however any appropriate latch may be used in  
the present invention. With the jaws **10** locked open, the user  
may place an ordinary plastic shopping bag around the jaws **10**  
and secure it to the bag clips **42** without working against the  
mechanism, simplifying the process.

Fig. 4 is a front view of the animal waste scooper **8**, the  
opposite side being a mirror image. The jaws **10** are  
skeletonized to reduce weight, presenting an open frame which  
discourages the use of the device without bags. This keeps the  
device clean and aids in its longevity. The linkage assembly **50**  
is located midway between the opposing sides of the support  
bridge **34** and in line with the longitudinal axis of the hollow  
pole **24** to enable proper function of the linkage assembly **50**  
through the actuator **26**. The bags clips **42** are located at the  
sides of the support bridge **34**.

Fig. 5 is a side view showing the linkage assembly **50** and  
jaws **10** of the animal waste scooper **8**. Here the actuator **26** is  
in tension, pulling the upper links **28** toward the handle **12**.  
The upper links **28** pivot about the pin joining the upper links  
**28**, thus drawing the opposite ends of the upper links **28**  
together. Alternatively, a one-piece flexible cable (not shown)  
may be used. As the ends of the upper links are drawn  
together, the bell cranks **30** are forced to rotate about the  
stationary hinge pin **32**. The upper arms of the bell cranks **30**

are drawn together, and the lower arms of the bell cranks 30 are forced apart due to rotation about the hinge pin 32. The lower arms of the double bell crank 30 are attached to the jaws 10 via the guide rods 36. The guide rods 36 engage the guide slots 38 in the support bridge 34. At their closest points, the guide slots 38 are close enough together to permit the jaws 10 to fully close. At their extreme ends, the guide slots 38 are far enough apart to permit the jaws 10 to accept a plastic bag and to be placed around an object to be picked up.

Fig. 6 is a view of the linkage assembly 50 and jaws 10 of the animal waste scooper 8, with bag 44 (shown in phantom) attached. To secure a bag 44 around the jaws 10, the user must squeeze the trigger 18 to the handle 12 and operate the latch 46. This locks the jaws 10 open. With the jaws 10 open, the user places the jaws 10 into an inverted, open, conventional plastic shopping bag 44, with one of the bag's two loop handles 48 located on each side of the support bridge 34. Each handle loop 48 is secured into a bag clip 42 on the support bridge 34, and the remaining portion of the bag 44 is pushed up into the space between the jaws 10, thus covering the jaws 10 and allowing a space between the jaws 10 large enough to encompass the object desired for retrieval.

When the object is between the jaws 10, the latch 46 may be released. The springs 40 act to bias the jaws 10 to the closed

position, whereby the object is captured between the jaws **10** and inside the bag **44**. In this manner, the jaws **10** stay clean.

It is to be understood that the present invention is not limited to the embodiments described above, but encompasses any and all embodiments within the scope of the following claims.

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